

1 NATIONAL SPACE WEATHER PROGRAM

The United States National Space Weather Program (NSWP) began 10 years ago as a collaborative enterprise among the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), and the Department of Defense (DOD). Other agencies that participate include the Department of Energy (DOE), the Department of the Interior (DOI), and the Department of Transportation (DOT).

The NSWP is a Federal government interagency initiative whose overall objective is to speed improvement of space weather services in the United States in order to prepare the country to deal with technological vulnerabilities that can occur due to the space environment. As stated on the program's web site (www.nswp.gov), "The overarching goal of the NSWP is to achieve an active, synergistic, interagency system to provide timely, accurate, and reliable space weather warnings, observations, specifications, and forecasts." From the beginning, the program was intended to build on existing governmental and civil capabilities and to establish a coordinated process to set national priorities, focus agency efforts, and leverage national resources. Also from the beginning, the program has encouraged and included contributions from the user community, operational forecasters, researchers, modelers, and experts in instruments, communications, and data processing and analysis – across the government, in research universities, and from industry. The program was conceived and structured as a partnership among academia, industry, and government.

At the Federal level, the program is implemented and managed by the National Space Weather Program Council (NSWPC). The council operates within the Office of the Federal Coordinator for Meteorological Services and Supporting Research under guidance of the Federal Committee for Meteorological Services and Supporting Research (FCMSSR).¹ The NSWPC consists of representatives from the seven executive branch agencies, listed above, that have mission-related involvement in space weather. The NSWPC provides oversight and policy guidance to ensure common needs are met and the interests of each agency are addressed. The Committee for Space Weather, which is co-chaired by NSF, NOAA, NASA, and DOD, was established by the NSWPC as the principal agent for advancing the goals of the program.

The National Space Weather Program is based upon several published documents, including a 10-year strategic plan, approved in August 1995 (OFCM 1995), and an implementation plan; the first edition of which was published in January 1997 (OFCM 1997), with a second edition in July 2000 (OFCM 2000).²

The NSWP has been in existence for more than a decade, and the latest implementation plan is now more than 5 years old. Policy considerations and research and user understandings related to

¹ The OFCM homepage on the Internet is www.ofcm.gov.

² These NSWP foundational documents are available online as PDF files at http://www.nswp.gov/nswp_docs.htm.

space weather and national interests continue to evolve in important ways. In view of this history, as well as the growing international interest and presence in research and applications related to space weather, the FCMSSR and the Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR) directed that the OFCM undertake a comprehensive review of the NSWP. The stated purposes of this review were “to quantify and document the progress toward meeting the NSWP-stated goals in observations, research, modeling, transition of research to operations, and education and outreach; to see if the program is still on target and moving in the direction pointed to by the strategic plan; to determine whether the strategic goals should be adjusted at this time based on emerging/evolving requirements; and to suggest a way ahead which will form a basis for a new strategic plan covering the next 10 years.” The NSWP strategic goals alluded to in this purpose statement (table 1-1) were listed in the Strategic Plan and both editions of the Implementation Plan.

To conduct the review as directed by the FCMSSR and ICMSSR, the Federal Coordinator for Meteorology formed a committee of six individuals from outside the immediate responsibilities of the involved agencies, yet knowledgeable about the program and active in aspects of space weather research and applications. The formal charge to this Assessment Committee is in Appendix A, and the committee membership is listed in Appendix B.

Table 1-1. National Space Weather Program Goals

<i>To advance</i>
<ul style="list-style-type: none"> • Observing capabilities • Fundamental understanding of processes • Numerical modeling • Data processing and analysis • Transition of research into operational techniques and algorithms • Forecast accuracy and reliability • Space weather products and services • Education on space weather
<i>To prevent or mitigate</i>
<ul style="list-style-type: none"> • Under- or over-design of technical systems • Regional blackouts of power utilities • Early demise of multi-million dollar satellites • Disruptions of communications via satellite, HF, and VHF radio • Disruption of long-line telecommunications • Errors in navigation systems • Excessive radiation doses dangerous to human health

Source: OFCM 1995, pg. 5; OFCM 2000, pg. 1-10.

These goals of the NSWP were to be achieved through nine specified activities:

- Assess and document the impacts of space weather
- Identify customer needs
- Set priorities
- Determine agency roles

- Coordinate interagency efforts and resources
- Ensure exchange of information and plans
- Encourage and focus research
- Facilitate transition of research results into operations
- Foster education of customers and the public.

The detailed program assessment presented in chapter 3 is organized under these nine previously specified activities, plus an additional category for crosscutting private sector activities and international activities.

To carry out its review and assessment tasks, the Committee used the following means, in addition to the knowledge of the NSWP and space weather issues brought by the individual members:

- Meetings with relevant agency officials, held in the offices of the OFCM
- Visits to key sites and activities related to space weather, around the nation
- Requests for comment about the NSWP from the general research community and the user community.

The requests for comment were advertised widely to obtain, insofar as possible, a cross-section of responses. Appendix C lists the committee's information-gathering meetings, with the meeting agendas. Appendix D contains responses to the requests for comment.

